

# S&MA Mission Services

## Task Directive

<b>Control No.</b> 0072	<b>ORG No.:</b> QS20	<b>PROJECT CODE:</b> ET	<b>Contract No.</b> NAS8-00179
<b>Originator's Signature:</b> Keith Layne <i>for Angela J. Daniels</i>		<b>Date:</b> 6/28/02	<b>Originator's Priority:</b> High
<b>Office Manager's Signature:</b> Alex Adams <i>Alex Adams</i>		<b>Date:</b> 7-1-02	
<b>COTR's Approval:</b> <i>Terry J. [Signature]</i>		<b>Date:</b> 8-19-02	
<b>Subject:</b> Safety & Mission Assurance support for MSFC Space Shuttle Projects – External Tank			

### Task Description:

#### System Safety Engineering (PWS Section 3.0)

- 1) Develop and utilize tools needed to assure that all safety requirements are identified including Fault tree analyses, logic trees and hazard analyses, etc
- 2) Assess Hazard Analyses and controls, develop and maintain safety analysis reports (SAR)
- 3) Support milestone reviews, safety reviews and readiness reviews to assure compliance with safety requirements
- 4) Assess proposed changes, deviations and waiver to assure compliance with safety requirements
- 5) Provide system safety expertise for Configuration Control Boards, (CCB), Problem Review boards, etc
- 6) Identify adverse safety trends and promptly notify MSFC S&MA
- 7) Provide safety assessments during launch countdowns and missions
- 8) Perform Safety Assessments for out-of-family issues, nonconformances, anomalies, hazards and PAR issues
- 9) Support Space Shuttle System Safety Review Panel (SSRP)

#### R&M (PWS Section 5.0)

- 1) Prepare R&M plans for MSFC developed designs and evaluate contractor R&M plans
- 2) Evaluate changes, out-of-family conditions, material review and deviations for impact to FMEAs CILs
- 3) Evaluate documents related to R&M to assure consistency and adequacy with project requirements
- 4) Evaluate OMRSDs and implementing OMIs
- 5) Participate in Project milestone reviews
- 6) Prepare reliability assessments in support of preflight assessment reviews and flight readiness milestone reviews
- 7) Perform design trade studies
- 8) Evaluate contractor R&M analyses
- 9) Perform ad hoc numerical R&M analyses
- 10) Develop and/or evaluate FMEAs and CILs for compliance with requirements
- 11) Develop and utilize tools needed to assure that all applicable R&M requirements are identified for MSFC programs
- 12) Perform probabilistic risk assessments
- 13) Evaluate in-house and contractor methods for identification and control of limited life items
- 14) Evaluate engineering and programmatic changes for R&M impact
- 15) Evaluate in-house and contractor provided FMEA analyses of software design

#### Quality (PWS Section 6.0)

- 1) Prepare, evaluate and provide assessments of in-house and contracted quality related documentation
- 2) Perform periodic review and assessment of in-house and contracted quality related contractual documentation
- 3) Provide QE expertise for the preparation, evaluation and assessment of in-house and contractual documentation relative to processes encountered during manufacturing, inspection and test phases of projects
- 4) Participate in milestone reviews, evaluating quality assurance and certification requirement compliance
- 5) Develop and utilize any tools needed to assure that all QA requirements are identified for MSFC programs and projects
- 6) Prepare and evaluate workmanship standards, specifications, procedures and control documentation for in-house and contracted processes and purchases
- 7) Evaluate in-house inspection criteria for safety critical hardware and/or evaluate and provide assessments on other MSFC contractor or Government Agency inspection criteria

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- 8) Provide Engineering Change Proposal Quality evaluations and support to Change Control Board members
- 9) Participate in the development and implementation of Quality training programs
- 10) Provide engineering change evaluation support, providing quality assurance assessments, change integration support and support to change package engineers, as required
- 11) Participate in verification programs providing evaluation of test results versus verification requirements and maintenance of certification records
- 12) Provide support to MRB members, recommend corrective action for nonconforming conditions and support trending analyses (Process/Quality Escapes)
- 13) Participate in problem and failure investigations to determine root cause and corrective action

## Project Assurance (PWS Section 8.0)

- 1) Participate in and provide assessments to the milestone, data, safety and flight readiness or operations reviews
- 2) Coordinate the HEI S&MA activities with the S&MA project lead to include resource status
- 3) Serve as expert advisor on S&MA topics for project team meeting, TIM's, problem investigations, etc.
- 4) Track S&MA project team action items and issues
- 5) Coordinate the development of Fault Tree Analysis (FTA) performed by discipline - (if deemed necessary; if not in-house then contractor may perform)
- 6) Provide logistical coordination for element PFA review and submit quality records to the PAR Coordinator

## **Deliverables:**

### **Safety**

- 1) Safety inputs to engineering changes, verifications, etc.
- 2) Safety review comments to Milestone Review documentation
- 3) Safety Assessments for Class One Changes and out-of-family issues

### R&M

- 1) Reliability inputs to engineering changes, etc.
- 2) Reliability review comments to Milestone Review documentation
- 3) FMEA/CIL or Reliability Assessments for Class One Changes and out-of-family issues

### Quality

- 1) Quality input to engineering changes, problem analyses, etc.
- 2) Review comments for Milestone Review documentations
- 3) Inspection reports

### Project Assurance

- 1) Provide periodic status of functional discipline support to project in form of matrix
- 2) Coordinate development of PAR one page assessments and presentations
- 3) Flight Readiness/PAR data as applicable

## **Schedules/Duration:**

- 1) Support schedules as defined by the Project
- 2) Through duration of contract

## **Resource Estimate:**

(b)(4)

Report Progress To: *S&MA Project Lead*

Frequency of Report:

Weekly